PDST

Professiona Deve opment
Service for Teachers | An tSeirbhís um Fhorbairt
Ghairmiúi do Mhúinteoirí

An Roinn Oideachais
Department of Education

Agricultural Science
Phase 2
National Workshop 4

LEAVING CERTIFICATE
AGRICULTURAL SCIENCE

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Expectations for Online CPD

The PDST __does not__ give permission for this CPD event to be recorded. Screenshots __cannot__ be taken.

- The meeting link should not be shared outside of agreed attendees.
- Timekeeping.
- Bring relevant resources.
- Respect all participant contributions.
- Engage in professional dialogue and interaction.
- Respect the confidentiality of all participants and issues raised.
- Mute your microphone when you are not talking.
- Raise the pen or hand to indicate to the facilitator that you wish to contribute.

PDST Supports
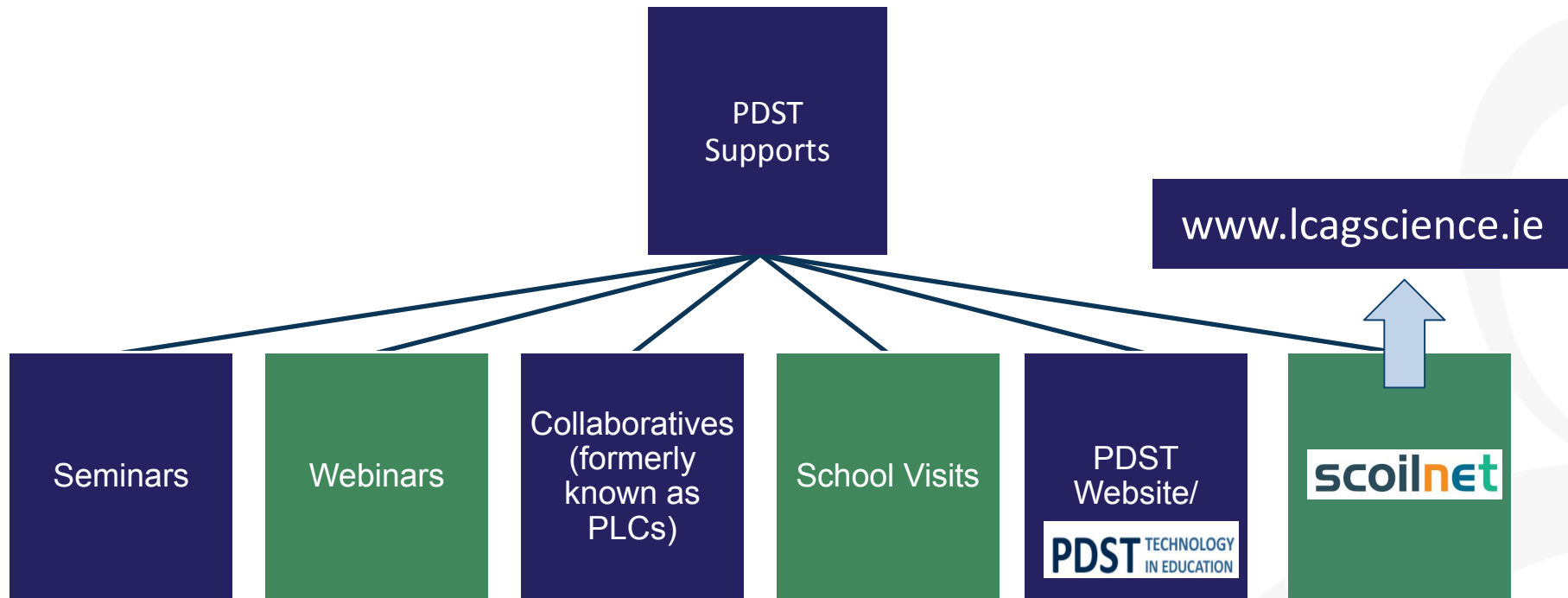
Purpose for Today

To support inclusion in the agricultural science classroom through exploring inclusive pedagogies

To experience specified practical activities as an integrated part of teaching and learning in agricultural science

To allow for reflection and continued collaboration to support future growth and development of the specification

Timetable

Session 1 9:30 - 11:00	• Inclusion in the agricultural science classroom • An introduction to Universal Design for Learning
Tea/Coffee Break **11:00 - 11:20**	
Session 2 11:15 - 1:00	• Genetics experiment 3.2.2 (k) • Project Based learning to enhance teaching and learning
Lunch **1:00 - 2:00**	
Session 3 2:00 - 3:30	• Looking at the evidence - what we know now about the course • Reflecting on our journey to plan our next steps in our department

Key Messages

Using the Universal Design for Learning (UDL) framework and the Gradual Release of Responsibility (GRR) model to scaffold an inclusive learning environment

Teachers view collaboration as a means to improve practical skills, student learning and to enhance their own professional development

Reflecting on your CPD journey to date will allow you to appreciate how you have become more engaged with the specification, more resourceful, confident and active in teaching and learning

Session 1

By the end of this session participants will have:

- Considered the UDL framework and support documents as core factors for making learning accessible for all students

- Discussed an array of supports available to create an inclusive agricultural science classroom

- Actively engaged with the GRR model to develop effective differentiated strategies to support all learners

What is Inclusion?

Think

Pair

Share

Universal Design for Learning (UDL)

UDL provides an effective framework to improve the teaching and learning experience of all students within the Agricultural Science classroom

"*Levels of demand in any learning activity will differ as students bring different ideas & levels of understanding to it. The use of strategies for differentiated learning such as adjusting the level of skills required, varying the amount and the nature of intervention, and varying the pace and sequence of learning will allow students to interact at their own level*"

(Specification, pg 14)

Affective Networks
The WHY of learning

Recognition Networks
The WHAT of learning

Strategic Networks
The HOW of learning
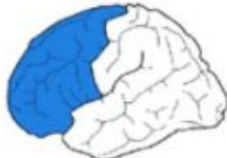
...by Informing the Design of Multiple, Flexible Opportunities to Learn

Inclusion in the Agricultural Science Classroom

The subject teacher has primary responsibility for progress of all students.

The Student Support Plan should be available, accessed and consulted with when planning.

"Students vary in the amount and type of support they need to be successful"
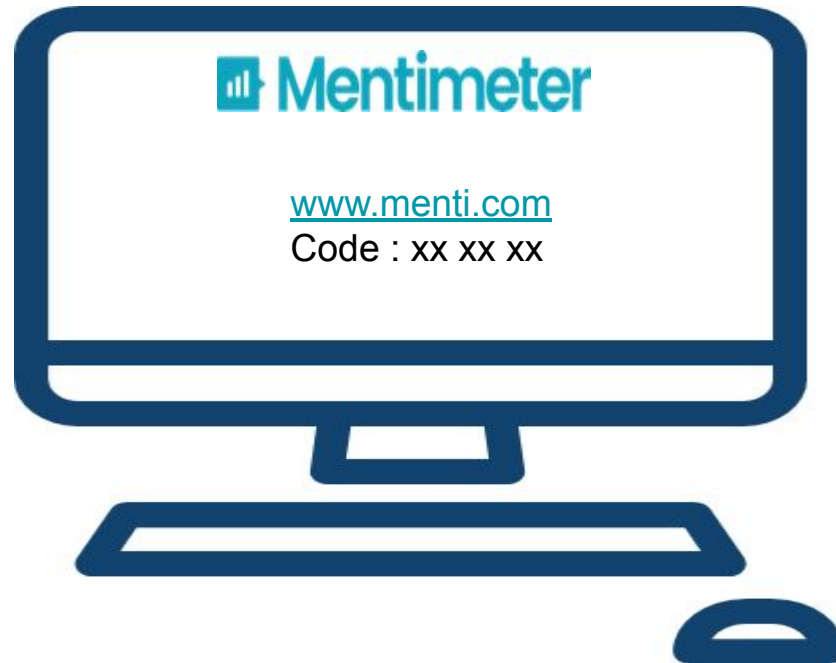(Specification, pg 14)

Key Supports for Inclusion

What Inclusive Pedagogies have Worked Well in your Classroom?

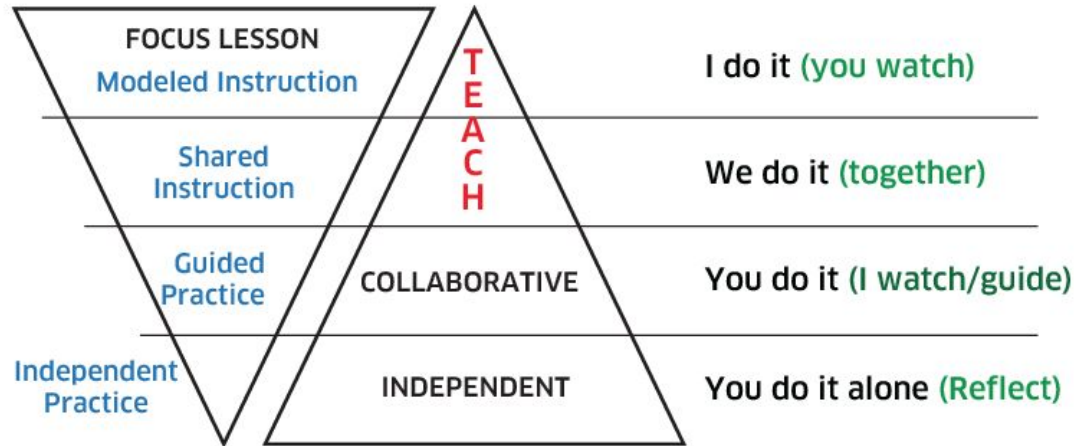How have you supported and included students with SEN in your classroom?

www.menti.com
Code : xx xx xx

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The Gradual Release of Responsibility

TEACHER RESPONSIBILITY

FOCUS LESSON **Modeled Instruction**	T E A C H	I do it (you watch)
Shared Instruction		We do it (together)
Guided Practice	COLLABORATIVE	You do it (I watch/guide)
Independent Practice	INDEPENDENT	You do it alone (Reflect)

STUDENT RESPONSIBILITY

Fisher & Freyer (2008)

- Dialogic instruction
- Instructional scaffolding
- Think aloud strategies
- Peer cooperation
- Self assessment
- Being personally effective

Stage 1 - Modelling - "Teacher as Learner"

Teacher modelling instruction

Stage 1

- Have I listed what I need to find out?
- What are other sources saying about this topic? What sources would I consider?
- Make sure I am using appropriate and effective search terms and queries.
- What domains am I going to use? Are they trusted? Am I gathering relevant information?
- How will I identify bias in my sources?
- Have I compiled information from various sources and how have will I synthesise it into my your own words?

Using the GRR Model to Develop Effective Research Skills for IIS

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Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2023

Agricultural Science

Individual Investigative Study

Coursework Brief

Common Level

100 marks

"Exploring nutrition and nutrients - the importance to Irish Agriculture of their effective use and management"
SEC, p5

Rewordify.com
understand what you read

grammarly
Your best writing-assitant online

Immersive Reader

scoilnet

Britannica School

Enhancing Inclusion in the Agricultural Science Classroom

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How would you use the GRR model and support documents to enhance the inclusive classroom?

What similar strategies have I used?

What differentiated supports will I now provide for inclusion?

Session 1 - Plenary

By the end of this session participants will have:

- Considered the UDL framework and support documents as core factors for making learning accessible for all students

- Discussed an array of supports available to create an inclusive agricultural science classroom

- Actively engaged with the GRR model to develop effective differentiated strategies to support all learners

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Tea/Coffee Break

Enjoy!

Session 2

By the end of this session participants will have:

- Discussed and reflected on approaches to completing genetics SPA 3.3.2(k)

- Engaged with Project based learning as an active teaching methodology to explore the genetic concepts on the agricultural science course

Presenting Real World Content for Investigations

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How does this genetic concept link to the specification?

Connecting to the specification

Pg 16
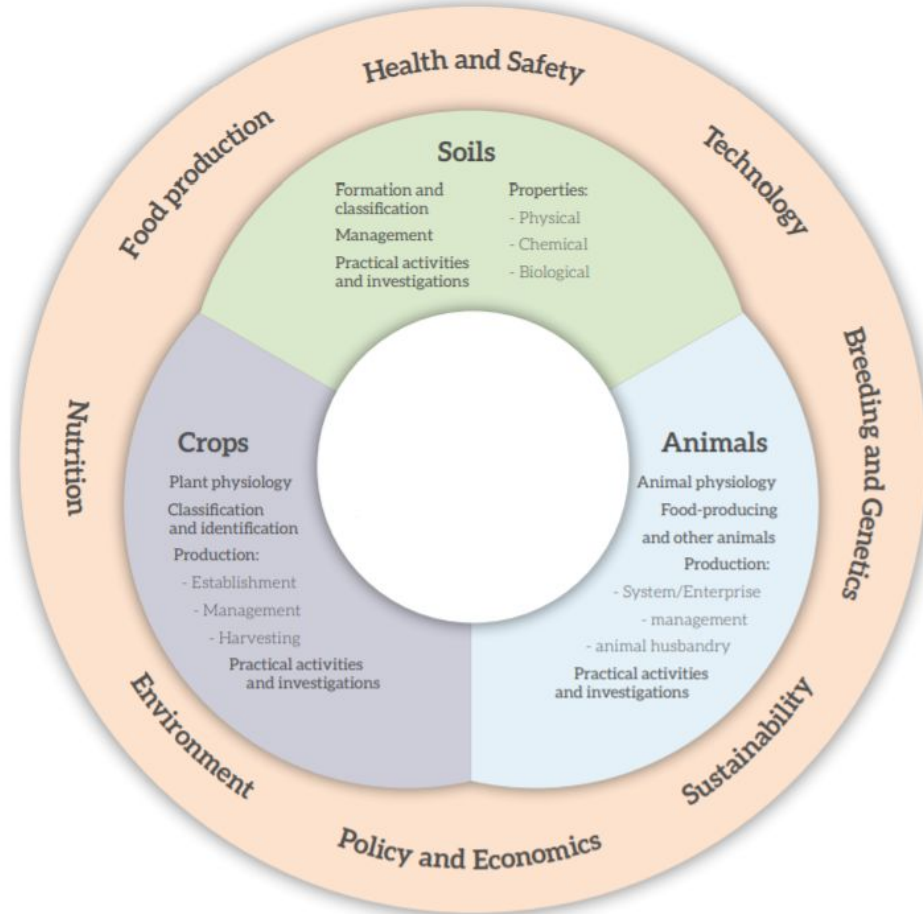
Understanding SPA 3.3.2(k)

Investigate the **complexity** associated with the genetic inheritance of traits by **hybridising** two varieties to determine the **rate of transfer** of the required trait (e.g. petal colour) to the next progeny*

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What do these keywords mean to you?

pg 21 Specification

Think

Pair

Share

LEAVING CERTIFICATE
Ordinary and Higher Level

Agricultural Science
Curriculum Specification
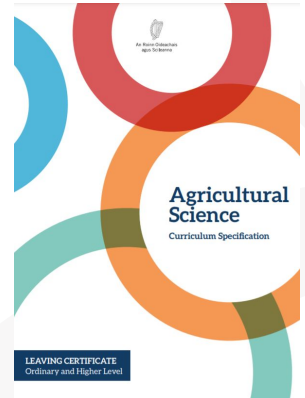
Complexities with 3.3.2(k)

- Parental plant species - size of flower head
- Parental genotype - must be heterozygous
- Growth type of a generation
- Preventing self & cross pollination

	B	B
b	Bb	Bb
b	Bb	Bb

B = Dominant
b = Recessive
Bb = Heterozygous

Genotype vs Phenotype

GENOTYPE	PHENOTYPE
The genotype is an organism's genetic information.	The phenotype is the set of observable physical traits.
BB homozygous dominant	purple
Bb heterozygous	purple
bb homozygous recessive	white

Top view   Side view

Carpel(s)
Stigma
Style
Ovary
Petal
Sepal
Stamen
Anther
Receptacle
Filament
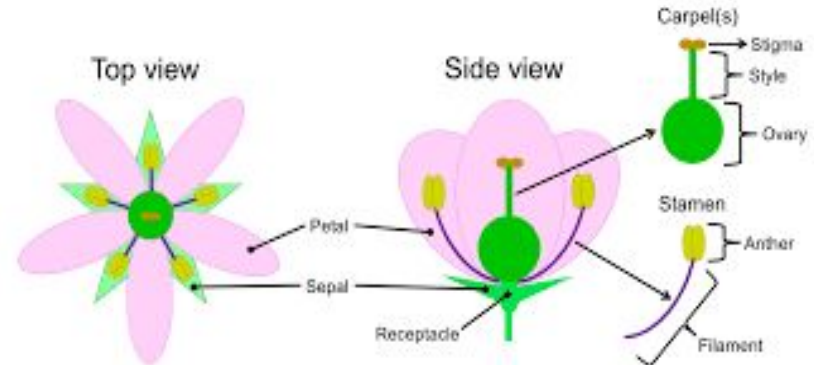
Possible Approaches to SPA 3.3.2(k) - Traits we could investigate

Pea Trait	Dominant trait		Recessive trait		Numbers in second generation (F2)
Seeds					
Seed shape	Round		Wrinkled		5474:1850
Seed colour	Yellow		Green		6002:2001
Whole plants					
Flower colour	Purple		White		705:224
Flower position	Axial		Terminal		651:207
Plant height	Tall		Short		787:277
Pod shape	Inflated		Constricted		882:299
Pod colour	Green		Yellow		428:152

Pg 18 + 19

A Mendelian Approach to SPA 3.3.2 (k)

Exploring Mendel's laws of segregation and inheritance to investigate complexities associated with SPA 3.3.2 (k)

The potential of Project Based Learning (PBL)

- Seed germination - LO 3.3.1 a - e
- A complete genetics module including monohybrid crosses
- Experimental design LO 1.1, 1.2, and 1.3
- The effects of nutrients on crops LO 3.3.2 (h)
- Examining N-fixation by exploring the function of rhizobium bacteria in nodules

Designing a genetics project

- Selecting an appropriate genetics "topic"
- Ensure that the projects coverage includes multiple learning outcomes
- How would we assess the project?
- Opportunities for UDL
- Reflection on success of the project
  - Self & peer feedback
  - Reflect on the learning process

Padlet

After you have completed your project design activity please upload a photo of it onto the padlet under the section Phase 2 National Seminar 4.

Click on the QR shown or alternatively log in via this webpage:

https://padlet.com/agsciencewebinar/2pb8bc9 ms1g5k8tl

Session 2 - Plenary

By the end of this session participants will have:

- Discussed and reflected on approaches to completing genetics SPA 3.3.2(k)
- Engaged with Project based learning as an active teaching methodology to explore the genetic concepts on the agricultural science course

Lunch Break

Enjoy!

Session 3

By the end of this session participants will have:

- Examined and reflected on the relevant supporting documents

- Reflected on a teacher's approach to student-centered learning

- Devised a personal reflection

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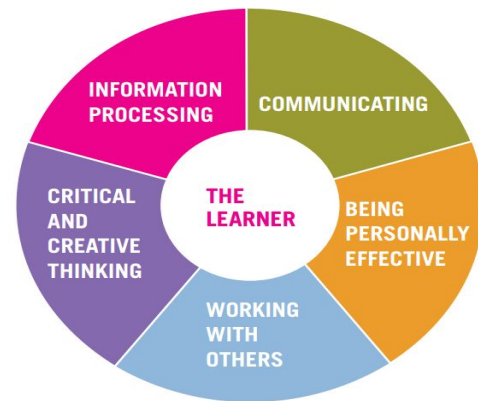# Working with the Evidence

Pg 23 & 24

Working with the Evidence - Questions

What do you now see as key messages from these documents?

How are these messages going to impact planning, teaching and learning and assessment in your Agricultural Science Classroom?

In light of this evidence what does assessment now look like?
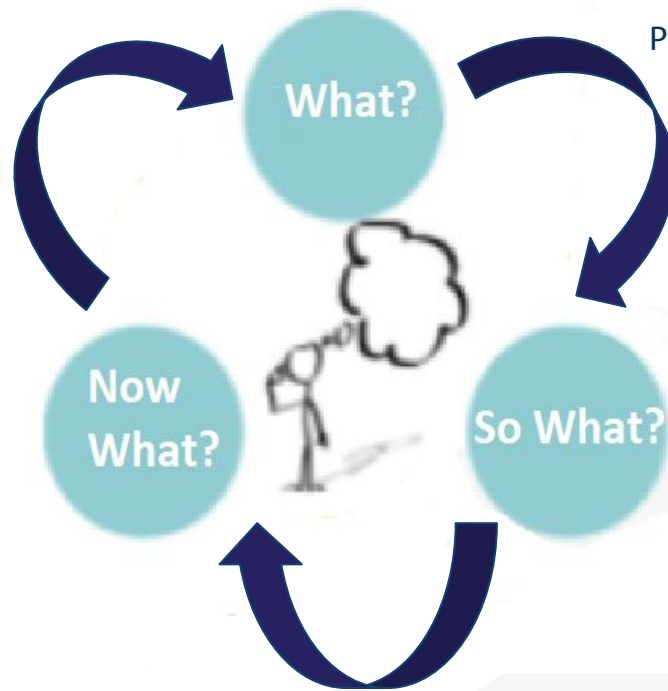
Specification, 2019 P.13

Reflecting on the Evidence

What is this telling us?

So what impact will this have on you and your students in the Agricultural Science classroom?

Now what? ...

Rolfe et al., 2001

Bringing Strand 1 to Life in the Agricultural Science Classroom

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Many thanks to the teachers and students of Ardscoil Rath Iomgháin in County Kildare
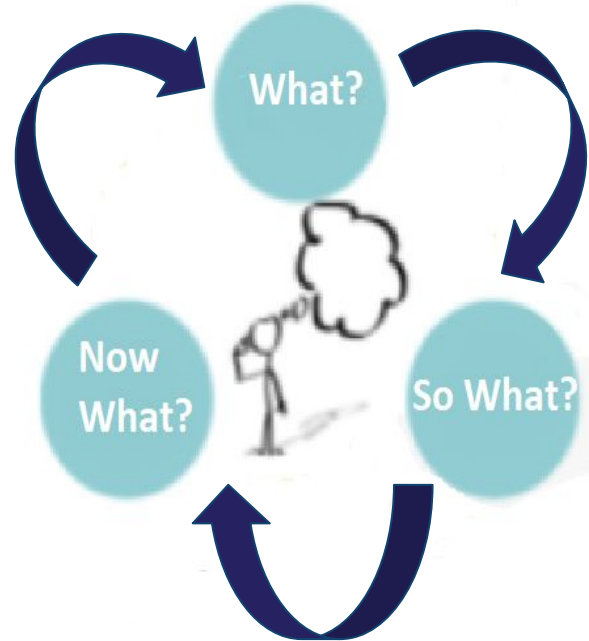
Session 3: Plenary

Participants will have:

- Examined and personally reflected on the relevant supporting documents

- Reflected on a teacher's approach to student centered learning

- Devised a personal course reflection

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National Workshop 4 Evaluation

Please complete the evaluation form:

References

Session 1

https://www.cast.org/impact/universal-design-for-learning-udl

https://www.curriculumonline.ie/getmedia/f668d804-6283-4d4a-84ab-c71e5b37d198/Specification-for-Junior-Cycle-Science.pdf

CRC Committee, General Comment 9 on Children with Disabilities (2006), UN Doc CRC/C/GC/9, 27February 2007, para 67

Lani Florian & Jennifer Spratt (2013) Enacting inclusion: a framework for interrogating inclusive practice, European Journal of Special Needs Education, 28:2, 119-135, DOI: 10.1080/08856257.2013.778111

National Council for Special Education (2011). Inclusive Education Framework.Meath:NCSE

Winter,E.& O'Raw,P.(2010).Literature review on the principles and practices relating to inclusive education for children with special educational needs

Session 2

Universal Design for Learning **A Best Practice Guideline 2017"(https://www.ahead.ie/userfiles/files/shop/free/UDLL%20Online.pdf)**

https://ncca.ie/media/4107/learning-outcomes-booklet_en.pdf (focus on learning outcomes NCCA)

http://www.sess.ie/sites/default/files/Resources/science/textbook.pdf (Differentiation in action)

https://ncca.ie/media/3958/learning-outcomes-an-international-perspective.pdf (Learning outcomes International)

Session 3

European Commission (2020) Blended Learning in School Education – guidelines for the start of the academic year 2020-21

https://www.schooleducationgateway.eu/downloads/Blended%20learning%20in%20school%20education_European%20Commission_June%202020.pdf

Freshwater, D. and Rolfe, G., 2001. Critical reflexivity: a politically and ethically engaged research method for nursing. *NT Research*, *6*(1), pp.526-537.